

What is claimed is:

- 1           1.     A cementing tool for cementing a casing assembly at a junction of  
2 plural wellbores, comprising:  
3                 a body;  
4                 an anchoring mechanism adapted to anchor the body axially within  
5 the casing assembly; and  
6                 a flow conduit adapted to channel cement flow to an annular region  
7 outside the casing assembly,  
8                 wherein the anchoring mechanism is adapted to be released to enable  
9 retrieval of the cementing tool from the casing assembly.
- 1           2.     The cementing tool of claim 1, further comprising a sealing element  
2 coupled to an external surface of the body and adapted to effect a fluid seal  
3 between the body and the casing assembly.
- 1           3.     The cementing tool of claim 2, further comprising another sealing  
2 element coupled to the external surface of the body.
- 1           4.     The cementing tool of claim 3, further comprising setting members  
2 adapted to set the sealing elements.
- 1           5.     The cementing tool of claim 4, further comprising ports, each port  
2 adapted to communicate fluid pressure from inside the cementing tool to one side  
3 of a respective setting member.

1           6.     The cementing tool of claim 5, further comprising a shear  
2 mechanism adapted to attach the setting member to the body of the cementing  
3 tool.

1           7.     The cementing tool of claim 1, further comprising flow control  
2 device to control fluid flow through the flow conduit.

1           8.     The cementing tool of claim 7, wherein the flow control device  
2 comprises a sliding sleeve.

1           9.     The cementing tool of claim 7, wherein the flow control device  
2 comprises a check valve.

1           10.    The cementing tool of claim 1, further comprising a first member  
2 slidable from a first position to a second position to lock the anchoring  
3 mechanism.

1           11.    The cementing tool of claim 10, wherein the first member is slidable  
2 from the second position to the first position to release the anchoring mechanism.

1           12.    The cementing tool of claim 10, further comprising a shear  
2 mechanism adapted to temporarily restrain sliding of the first member.

1           13.    The cementing tool of claim 1, further comprising a bypass device  
2 having a distal end adapted to connect to a guide shoe at an end of the casing  
3 assembly.

1           14.    The cementing tool of claim 13, wherein the bypass device has an  
2 inner conduit adapted to isolate cement flow from an internal volume of the casing  
3 assembly, the inner conduit of the bypass device being part of the flow conduit.

1           15.    The apparatus of claim 14, wherein the one bypass device comprises  
2 a plurality of tubes.

1           16.    The cementing tool of claim 13, wherein the casing assembly defines  
2 plural lateral legs, the cementing tool further comprising a barrier disposed about  
3 the bypass device to seal cement from entering the internal volume through one of  
4 the lateral legs.

1           17.    The cementing tool of claim 1, further comprising an outer sleeve  
2 formed of a stretchable material, the outer sleeve adapted to detach from hardened  
3 cement outside the cementing tool to enable easy removal of the cementing tool  
4 from the hardened cement.

1           18.    The cementing tool of claim 1, wherein the body defines an inner  
2 bore and one or more radial ports in communication with the inner bore, the  
3 cementing tool further comprising a flow control device adapted to control flow  
4 through the one or more radial ports.

1           19.    The cementing tool of claim 18, wherein the inner bore comprises a  
2 lower portion below the one or more radial ports to receive a plug provided ahead  
3 of a flow of cement.

1           20.    The cementing tool of claim 1, wherein the casing assembly has a  
2 wall separating the plural bores, and wherein the body of the cementing tool is  
3 adapted to equalize pressure across the wall.

1           21.    The cementing tool of claim 1, wherein the anchoring mechanism  
2 comprises a positive feedback locator to indicate that the cementing tool has  
3 reached a target depth.

1           22.    A method of cementing a casing assembly at a junction of plural  
2 wellbores, comprising:  
3                   lowering a cementing tool to engage inside the casing assembly;  
4                   pumping cement slurry through the cementing tool to fill an annular  
5 region outside the casing assembly;  
6                   disengaging the cementing tool from the casing assembly; and  
7                   lifting the cementing tool from the casing assembly.

1           23.    The method of claim 22, further comprising providing a landing  
2 mechanism on the cementing tool to engage a profile inside the casing assembly.

1           24.    The method of claim 23, further comprising setting at least one  
2 sealing element to seal the cementing tool against the casing assembly.

1           25.    The method of claim 24, wherein disengaging the cementing tool  
2 comprises unlocking the landing mechanism and unsetting the sealing element.

1           26.    The method of claim 22, further comprising providing a sleeve  
2 formed of a stretchable material around an outer surface of the cementing tool.

1           27.    The method of claim 26, further comprising detaching the cementing  
2 tool from a hardened block of cement by stretching the sleeve to unbond from the  
3 hardened block of cement.

1           28.    The method of claim 22, further comprising providing a positive  
2 feedback indicator on the cementing tool to indicate when the cementing tool is  
3 engaged in the casing assembly.

1           29.    The method of claim 22, wherein lifting the cementing tool is  
2 accomplished without first milling at the junction.

1           30.    The method of claim 22, further comprising providing a flow control  
2 device in the cementing tool to control the flow of a cement slurry.

1           31.    The method of claim 30, wherein providing the flow control device  
2 comprises providing one of a check valve and a sleeve valve.

1           32.    The method of claim 30, further comprising closing the flow control  
2 device to set a sealing element of the cementing tool against an inner surface of  
3 the casing assembly.

1           33.    The method of claim 32, further comprising opening the flow control  
2 device after setting the sealing element,  
3                    wherein pumping the cement slurry through the cementing tool  
4 comprises pumping the cement slurry through the flow control device.

1           34.    A method for cementing a casing assembly comprising a junction  
2 assembly and a guide shoe assembly, the junction assembly having an internal  
3 volume, the guide shoe assembly having a fluid channel therein, the method  
4 comprising:  
5                pumping cement down a work string;  
6                channeling cement flow from the work string through at least one  
7 bypass device extending through the internal volume of the junction assembly and  
8 down a lateral branch of the junction assembly into the fluid channel in the guide  
9 shoe; and  
10              preventing the flow of cement exiting the guide shoe from back  
11 filling into the internal volume of the junction assembly.

1           35.    The method of claim 34, wherein preventing the flow of cement  
2 comprises providing a barrier between one of the lateral branches and the bypass  
3 device.

1           36.    The method of claim 35, wherein preventing the flow of cement  
2 comprises effecting a fluid seal above the junction assembly to trap a fluid in the  
3 internal volume of the junction assembly prior to cementing the junction assembly.

1           37.    A system comprising:  
2                a casing assembly having a junction assembly to complete a junction  
3 of plural wellbores,  
4                the junction assembly having plural branch legs; and  
5                a cementing tool adapted to be releasably engaged in the casing  
6 assembly to direct flow of cement into the junction assembly and out into an  
7 annular region around the casing assembly.

1           38.    The system of claim 37, wherein the cementing tool has an external  
2   seal and a member adapted to set the external seal against an inner wall of the  
3   casing assembly.

1           39.    The system of claim 38, wherein the cementing tool has an  
2   anchoring mechanism, and the casing assembly has a landing profile, the  
3   anchoring mechanism adapted to engage the landing profile.

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